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A STUDY OF THE BLACKTONGUE PREVENTIVE VALUE OF LARD, SALT PORK, DRIED GREEN PEAS, AND CANNED HADDOCK

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I. Introduction

Goldberger and his associates have presented considerable evidence (1) (2) (3) (4) (5) that blacktongue of dogs and pellagra of man are identical conditions, and that both diseases can be cured and prevented by the P-P factor, or antipellagric vitamin.

In a recent communication (4), Goldberger, Wheeler, Lillie, and Rogers reported the blacktongue preventive action of 16 selected foodstuffs with special reference to the identity of blacktongue of dogs and pellagra of man.

The tests herein reported include pork lard, salt pork, dried green peas, and canned haddock, and represent a continuation of the series of experiments designed to test staple foodstuffs for their blacktongue preventive value. In view of the evidence that blacktongue of dogs and pellagra of man are analogous conditions, the success or failure of a given diet in preventing blacktongue is, in our opinion, a satisfactory basis for the evaluation of its pellagra preventive value.

The general methods of caring for and feeding the experimental animals have already been described (2) (3) and were followed without variation. As in the preceding feeding tests of this character, the experimental diets are, as a rule, freshly prepared each day. The daily allowance of food in general is intended to be enough only for the maintenance of normal body weight. Some of the animals were used repeatedly, with intermediate feedings of stock diet for the purpose of reconditioning. The stock diet has been either our diet No. 156, the composition and adequacy of which have already been reported (2), or a modification (diet No. 326) in which the beef of diet No. 156 is replaced by pork liver and the bone meal omitted. The adequacy of the pork liver has been reported by Goldberger, Wheeler, Lillie, and Rogers (4).

¹ This study was organized prior to the death of Surgeon Goldberger, on January 17, 1929, and was, in part, carried out under his direction.

In the tests here reported we have employed the preventive procedure using a test diet in which the components, other than the foodstuff under investigation, are believed to have contributed only an insignificant amount of the blacktongue preventive.

The curative procedure was not used in these tests, since it has always been necessary to check the curative test by a preventive test on account of the remittant or relapsing character of the disease which makes the interpretation of therapeutic results exceedingly difficult. In using the preventive test it has been our custom to continue the test at least one year, and frequently longer, unless symptoms of blacktongue develop at an earlier date.

As in previous studies (2), the first appearance of the mouth lesions has been considered as marking the beginning of the attack of blacktongue.

As reported by Goldberger, Wheeler, Lillie, and Rogers (4), the beginning of the experimental disease, based on the mouth lesion when induced by our basic diet No. 123 (or certain of its modifications) is only exceptionally delayed beyond about 60 days after the beginning of the feeding. We have, therefore, considered a very notable prolongation of this period, when manifested in more than one of a group of test animals, as indicating the presence of the blacktongue preventive in the test diet in an amount somewhat larger than that contained in our standard basic diet.

II. Present Studies

LARD

The wide use of lard in cooking throughout the Southern States, the area in which pellagra is most prevalent in this country, led us to investigate its possible blacktongue-preventive value. The following experiment was accordingly carried out:

Experiment 1

In this study pure pork lard was used, since it is the type of lard usually used in cooking. The lard was incorporated in a diet (No. 302-A), the composition of which is shown in Table 1. This diet is similar in every respect to that reported by Goldberger, Wheeler, Lillie, and Rogers (4) for a test of cottonseed oil, except that the lard quantitatively replaced the cottonseed oil. A suitable caloric portion of this was offered daily to each of five test animals—dogs 40, 112, 113, 138, and 139. The significant details relating to each of the test animals are as follows:

Dog 40.—Male. Whelped in the laboratory June 26, 1923, between which date and April 11, 1928, served in a number of experiments and suffered four attacks of blacktongue, the latest of which began July 9, 1927. On a stock diet for reconditioning from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 11.5 kilos; begins test diet No. 302-A.
June 19: Weighs 12.1 kilos.

June 23: At the end of a period of 39 days presented first signs of an attack of blacktongue, a reddened patch on the mucosa of each side of the upper lip and an injection of the floor of the mouth.

August 19: Dead. Blacktongue.

Dog 112.—Female. Acquired December 22, 1926, between which date and April 11, 1928, served in one experiment and suffered no attack of blacktongue. On a stock diet for reconditioning from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 8.1 kilos; begins test diet No. 302-A.
August 28: Weighs 6.8 kilos.

September 1: At the end of a period of 109 days presented first signs of an attack of blacktongue, a reddened bandlike lesion on the mucosa of each side of the upper lip, and an injection of the floor of the mouth.

December 21: Found moribund; gassed. Autopsy: Blacktongue and fatty degeneration of the liver.

Dog 113.—Male. Acquired January 17, 1927, between which date and April 11, 1928, served in one experiment and suffered no attack of blacktongue. On a stock diet from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 9.8 kilos; begins test diet No. 302-A.
July 24: At the end of a period of 70 days presented signs of an attack of blacktongue, an injection of the floor of the mouth, reddened bandlike lesion on either side of the upper lip. Weighs 9.7 kilos.

September 12: Found dead. Autopsy. Marked fatty degeneration of liver.

Dog 138.—Male. Acquired February 14, 1928, between which date and May 15, 1928, on stock diet.

May 15, 1928: In good condition; weighs 16.5 kilos; begins test diet No. 302-A.
October 16: After a period of 164 days presented first signs of a doubtful attack of blacktongue, a reddened elongated patch on the mucosa of each side of the upper lip. Weighs 11.2 kilos.

October 19: Animal now has purulent conjunctivitis and a mucopurulent discharge from the nostrils. Mouth presents the elongated reddened patch previously noted on each side of the upper lip but which is now covered by three smaller patches of superficial necrotic material. The floor of the mouth, cheeks, and mucosa of the lower lip are all faintly injected.

October 20: Found moribund; gassed. Autopsy: Lesions not exactly typical of blacktongue, fatty degeneration of liver.

Dog 139.—Male. Acquired March 22, 1928, between which date and May 15, 1928, on stock diet.

May 15, 1928: In good condition; weighs 13 kilos; begins test diet No. 302-A.

July 10: Ill-defined, reddened patch covering the mid-portion of the scrotum. Weighs 14.3 kilos.

July 12: After a period of 58 days presented first signs of an attack of blacktongue, a reddened patch on the mucosa of each side of the upper lip and an injection of the floor of the mouth and cheeks; there is also a sharply delimited, slightly reddened area covering the posterior two-thirds of the scrotum.

July 22: The lesion on the scrotum covering the posterior two-thirds now appears pale at the center with a vividly red periphery which sharply delimits the lesion from the normal skin. The central part of the lesion presents a dried, superficial layer which is desquamating in large flakes.

October 11: Found moribund; observed vomiting clear mucous; died during the day. Autopsy: Fatty degeneration of liver.

Summary.—All of the test animals with one possible exception (dog 138) presented signs of an attack of blacktongue in 39, 109, 70, 154, and 58 days, respectively. It would thus appear that lard in the quantity offered did not exert any appreciable blacktongue preventive action and thus that the lard contained little of the blacktongue preventive. Dog 40 presented only the lesions of blacktongue at autopsy. Dogs 112, 113, 138, and 139, in addition to the lesions of blacktongue, presented a fatty degeneration of the liver. The possible relation of this condition to the experimental diet is now under further study.

SALT PORK

The wide use of salt pork as a source of meat in the diet in the endemic pellagra centers of the South led us to investigate its blacktongue preventive potency. The following experiment was accordingly carried out.

Experiment 2

Salt pork butts, obtained on the open market, were used. The skin was removed and the meat run through a meat chopper. This was then incorporated in diet No. 321, the composition of which is shown in Table 2. This is a modification of the lard diet No. 302-A, the lard of which has been replaced by a sufficient quantity of salt pork to yield an equivalent amount of fat. The protein added by the salt pork necessitated a reduction in the quantity of casein in order to avoid unduly increasing the caloric value of the diet. A suitable caloric portion of this diet was offered daily to each of 8 test animals, dogs 52, 95, 114, 116, 131, 132, 133, 140. The significant details relating to each of the test animals are as follows:

Dog 52.—Female. Acquired September 25, 1923, between which date and April 11, 1928, served in several experiments and suffered several attacks of blacktongue, the latest of which began October 6, 1925. On a stock diet for reconditioning from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 10.2 kilos; begins test diet No. 321.

August 21: Weighs 11.3 kilos.

August 23: At the end of a period of 100 days presented first signs of an attack of blacktongue, a reddened bandlike lesion on the mucosa of each side of the upper lip, and an injection of the floor of the mouth.

November 22: Found dead. Autopsy: Pleurisy, bronchial pneumonia, fatty degeneration of liver.

Dog 95.—Male. Acquired November 30, 1925, between which date and August 6, 1928, served in several experiments and suffered one attack of blacktongue which began July 21, 1928. On a miscellaneous stock diet for reconditioning from August 6 to September 22, 1928.

September 18, 1928: Weighs 9.4 kilos.

September 22: In good condition; begins test diet No. 321.

October 30: At the end of a period of 38 days presented first sign of an attack of blacktongue, an injection of the floor of the mouth, reddened patch on the mucosa of each side of the upper lip. Weighs 9.9 kilos.

December 29: Found dead. Autopsy: Blacktongue, fatty degeneration of liver.

Dog 114.—Male. Acquired February 16, 1927, between which date and April 11, 1928, served in several experiments and suffered two attacks of blacktongue, the latest of which began October 27, 1927. On a stock diet for reconditioning from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 10.2 kilos; begins test diet No. 321.

June 3: At the end of a period of 19 days presents first sign of a beginning attack of blacktongue, an injection of the floor of the mouth.

June 5: Weighs 10.7 kilos.

July 25: Dead. Blacktongue.

Dog 116.—Male. Acquired February 16, 1927, between which date and April 11, 1928, served in one experiment and suffered no attack of blacktongue. On a stock diet from April 11 to May 15, 1928.

May 15, 1928: In good condition; weighs 7.5 kilos; begins test diet No. 321.

August 7: Weighs 7.7 kilos.

August 11: At the end of a period of 88 days presented first signs of an attack of blacktongue, a row of small reddened patches on the mucosa of each side of the upper lip.

September 21: Animal extremely weak; presented signs of blacktongue in the mouth; gassed during the day. Autopsy: Blacktongue, fatty degeneration of liver.

Dog 131.—Female. Whelped in the laboratory June 28, 1927, from which date to July 12, 1928, served in one experiment. Suffered no attack of blacktongue. On a miscellaneous stock diet from July 12 to September 22, 1928. September 22, 1928: In good condition; weighs 6.7 kilos; begins test diet No. 321. October 23: At the end of a period of 31 days presented first signs of an attack of blacktongue, an injection of the floor of the mouth. Weighs 6.5 kilos.

April 2, 1929: Dead. Autopsy: Fatty degeneration of liver; gastric hemorrhage; chronic blacktongue of the colon.

Dog 132.—Female. Whelped in the laboratory June 28, 1927, between which date and July 12, 1928, served in one experiment and suffered no attack of blacktongue. On a miscellaneous stock diet from July 12, 1928, to September 22, 1928.

September 18, 1928: Weighs 8.6 kilos.

September 22: In good condition; begins test diet No. 321.

October 30: At the end of a period of 38 days presented first signs of an attack of blacktongue, an injection of the mucosa of the floor of the mouth and cheeks. Weighs 8.7 kilos.

April 12, 1929: Found dead. Autopsy: Fatty degeneration of liver.

Dog 133.—Female. Whelped in the laboratory June 29, 1927, between which date and May 15, 1928, on a stock diet.

May 15, 1928: In good condition; weighs 8.1 kilos; begins test diet No. 321.

July 10: Slight suggestive reddening of the floor of the mouth. Mucosa of the cheeks slightly reddened and the mucosa of each side of the upper lip shows faint ill-defined, slightly reddened band which becomes continuous with reddening of the mucosa of the cheeks.

July 14: Lesions noted in the mouth have now faded and the mouth appears normal. Significance of the lesions is therefore doubtful.

September 15: At the end of a period of 123 days presented first signs of an attack of blacktongue, an injection of the floor of the mouth.

September 18: Weighs 6.6 kilos.

September 22: Moribund; gassed during the day. Autopsy: Blacktongue, fatty degeneration of liver.

Dog 140.—Male. Acquired April 6, 1928. On a stock diet from April 6 to May 15, 1928.

May 15, 1928: In good condition; weighs 7.6 kilos; begins test diet No. 321.

August 21: Weighs 7.1 kilos.

August 27: Found dead; no signs of blacktongue. Autopsy: Fatty degeneration of liver.

Summary.—Seven of the eight test animals developed blacktongue in 100, 19, 88, 123, 38, 31, and 38 days, respectively. The eighth animal (dog 52) died in 103 days from the beginning of the experiment without showing any definite signs of blacktongue, but presented a fatty degeneration of the liver at autopsy. The possibility that this dog might later have developed blacktongue can not be ruled out. It would therefore appear that the test diet was without appreciable preventive action, and thus that the salt pork contained very little of the blacktongue preventive.

Seven of the experimental animals died in the course of the experiment and presented at autopsy a fatty degeneration of the liver. The remaining animal (dog 114) developed blacktongue in 19 days from the beginning of the experiment and died in the acute attack. Five of the animals presenting fatty degeneration of the liver also showed the lesions of blacktongue at autopsy. In dogs 132 and 140 the acute attack of blacktongue had subsided and only the fatty degenerations were found at autopsy.

GREEN PEAS

In continuation of the study of vegetables a test of the blacktongue preventive value of dried green peas (*Pisum sativum*) was carried out as follows:

Experiment 3

Dried green peas (*Pisum sativum*) of the quality used for human consumption were ground and incorporated in diet No. 325, the composition of which is shown in Table 3. This diet is essentially the same as the diet used by Goldberger, Wheeler, Lillie, and Rogers (4) for the test of the blacktongue preventive value of cowpeas, the dried green peas quantitatively replacing the cowpeas. Thus the diet contained 300 grams of dried green peas per 2,400 calorie ration. A suitable caloric portion of this diet was offered daily to each of five test animals—dogs 84, 88, 89, 90, and 98. The significant details relating to each of the test animals are as follows:

Dog 84.—Male. Acquired March 2, 1925, between which date and April 11, 1928, served in a number of experiments and suffered one attack of blacktongue which began April 23, 1925. On a stock diet for reconditioning from April 11 to July 12, 1928.

July 10: Weighs 10.7 kilos.

July 12: In good condition; begins test diet No. 325.

February 2, 1929: At the end of a period of 205 days presented first signs of an attack of blacktongue, an injection of the floor of the mouth, cheeks, and soft palate.

February 5: Weighs 9.8 kilos.

April 28: Found dead. Autopsy: Blacktongue; fatty degeneration of liver observed microscopically.

Dog 88.—Male. Whelped in laboratory October 12, 1924, between which date and August 16, 1928, served in several experiments and suffered two attacks of blacktongue, the later one of which began April 27, 1927. On a stock diet for reconditioning from August 16, 1927, to July 12, 1928.

July 10, 1928: Weighs 5.9 kilos.

July 12: In good condition; begins test diet No. 325.

February 5, 1929: Weighs 5.5 kilos.

February 9: At the end of a period of 212 days presented the first signs of a definite attack of blacktongue, an injection of the floor of the mouth.

February 16: Found dead. Autopsy: Blacktongue.

Dog 89.—Female. Whelped in laboratory October 12, 1924, between which date and May 23, 1928, served in several experiments and suffered no attack of blacktongue. On a stock diet from May 23 to July 12, 1928.

July 10, 1928: Weighs 5.3 kilos.

July 12: In good condition; begins test diet No. 325.

January 2, 1929: Weighs 4.4 kilos.

January 5: At the end of a period of 177 days presented first signs of a definite attack of blacktongue, an injection of the floor of the mouth.

January 13: Dead. Blacktongue. Microscopic examination of the kidney showed slight fatty infiltration.

Dog 90.—Male. Whelped in the laboratory October 12, 1924, between which date and May 15, 1928, served in several experiments and suffered no attack of blacktongue. On a stock diet from May 15 to July 12, 1928.

July 10, 1928: Weighs 7.4 kilos.

July 12: In good condition. Begins test diet No. 325.

April 16, 1929: At the end of a period of 278 days presented first signs of an attack of blacktongue, an injection of the floor of the mouth; faint diffuse reddening of mucosa of cheeks and upper lip. Weighs 6.1 kilos.

April 25: Dead. Blacktongue.

Dog 98.—Male. Acquired January 18, 1926, between which date and May 15, 1928, served in two experiments without showing any manifestations of blacktongue. On stock diet from May 15 to July 12, 1928.

July 10, 1928: Weighs 7.1 kilos.

July 12: In good condition; begins test diet No. 325.

May 14, 1929: Weighs 7.8 kilos.

May 18: At the end of a period of 310 days presented first signs of an attack of blacktongue, an injection of the floor of the mouth and a reddened bandlike lesion on the mucosa of each side of the upper lip, and a large reddened patch on the ventral surface of the scrotum.

June 1: Dead. Autopsy: Blacktongue.

Summary.—All of the test animals developed blacktongue. These attacks began at the end of 205, 212, 177, 278, and 310 days, respectively. Thus, it would appear that the dried green peas in the quantities given exerted an appreciable delaying effect on the appearance of the disease. This shows that the dry green pea had an

appreciable preventive value. Considered in relation to the quantity of peas ingested per kilogram of body weight of dog, the preventive potency of the dried green pea must be rated as low and therefore as a relatively poor source of the blacktongue preventive factor.

All of the animals died in the course of the experiment and presented the lesions of blacktongue at autopsy. No fatty degenerations were observed on gross examination. Passed Asst. Surg. R. D. Lillie, to whom we are indebted for the microscopic examinations, reported fatty infiltration of the liver in dog 84.

HADDOCK

In a preceding paper (4) of this series a test of the blacktongue preventive value of canned salmon was reported, since it is one of the common canned meats in use in the southern part of the United States where the fresh meat supply is often restricted or absent. Canned haddock is another of the moderately priced canned meats available. It was therefore considered worth while to test its blacktongue preventive value. The following experiment was accordingly carried out:

Experiment 4.

One of the common commercial brands of canned, cooked, flaked haddock was used. The entire contents of the can were incorporated in a diet (No. 315), the composition of which is shown in Table 4. This diet is similar to the one used in the test of salmon by Goldberger, Wheeler, Lillie, and Rogers (4). It differs principally in containing a somewhat larger quantity of haddock (385 grams per 2,400 calorie ration as compared with 300 grams of salmon per 2,400 calorie ration). A portion of this diet having a sufficient calorie value was offered daily to each of six test animals—Dogs 63, 117, 129, 135, 136, and 137. The significant details relating to each of the test animals are as follows:

Dog 63.—Male. Whelped in laboratory November 4, 1923, and reared on miscellaneous stock diet. Up to January 24, 1928, served in a number of experiments and suffered several attacks of blacktongue, the latest of which began January 19, 1928.

January 24 to February 21, 1928, on stock diet.

February 21, 1928: In good condition; weighs 8.2 kilos; begins test diet No. 315.

October 15, 1929: Weighs 6 kilos.

October 21: At the end of a period of 20 months remains in good condition.

Has not presented any signs of blacktongue.

Dog 117.—Female. Acquired April 9, 1927, between which date and August 21, 1928, served in two experiments and suffered one attack of blacktongue, which began July 28, 1928. On a stock diet for reconditioning from August 21 to October 9, 1928.

October 9, 1928: In good condition; weighs 12.5 kilos; begins test diet No. 315.
January 23, 1929: Was observed having several convulsive seizures.

March 9: Animal had several clonic convulsive seizures, including muscles of mastication, which were followed by short period of apparent unconsciousness.

March 18: Animal appears to be very weak, but no evidence of paralysis or further convulsive seizures.

May 28: Again had attack of several convulsive seizures.

July 23: Weighs 10.1 kilos.

July 26: Found in coma and apparently dying. Gassed at 3:30 P. M. Autopsy: Fatty degeneration of liver. Animal did not present any signs of blacktongue.

Dog 129.—Female. Whelped in laboratory June 28, 1927. Reared on stock diet. Up to January 24, 1928, served in one experiment and suffered one attack of blacktongue, which began January 19, 1928. From January 24, 1928, to February 21, 1928, on stock diet.

February 21, 1928: In good condition; weighs 6.6 kilos; begins test diet No. 315.

October 15, 1929: Weighs 7.8 kilos.

October 21, 1929: Remains in good condition after 20 months; has not presented any signs of blacktongue.

Dog 135.—Female. Acquired January 5, 1928, from which date to February 21, 1928, on stock diet.

February 21, 1928: In good condition; weighs 5.4 kilos; begins test diet No. 315.

July 24: Weighs 5.5 kilos.

July 31: Found in comatose condition.

August 1: Found dead. Autopsy: Marked fatty degeneration of liver. Animal did not present any signs of blacktongue.

Dog 136.—Female. Acquired January 5, 1928. From January 6 to February 21, 1928, on stock diet.

February 21, 1928: In good condition; weighs 8.2 kilos; begins test diet No. 315.

October 15, 1929: Weighs 8.8 kilos.

October 21, 1929: At the end of a period of 20 months has not presented any signs of blacktongue; continues in good condition.

Dog 137.—Female. Acquired January 5, 1928. On stock diet from January 5 to February 21, 1928.

February 21, 1928: In good condition; weighs 8.6 kilos; begins test diet No. 315.

September 25: Animal appears somewhat lethargic; weighs 10.1 kilos.

September 26: Observed vomiting clear fluid containing flakes of bright red blood.

September 27: Found dead. Autopsy: Fatty degeneration of liver. Animal did not present any signs of blacktongue.

Summary.—None of the six test animals presented any recognizable evidence of typical blacktongue; however, three of the animals died in the course of the experiment. The outstanding lesion found at autopsy was a marked fatty degeneration of the liver, the cause of which is as yet undetermined.

In attempting to evaluate the results of this experiment it is necessary to keep in mind the possible significance of the deaths of three animals with fatty degeneration of the liver. Whether this represents some previously unrecognized deficiency or a condition resulting from a marginal quantity of the P-P factor can not be determined

from this experiment. Therefore, although three of the animals remained in apparent good health for 20 months, it is impossible to state with certainty that canned haddock in the quantity used afforded complete protection. A preliminary report regarding the occurrence of fatty degenerations in various experimental diets, including those covered in this report, has already been made by Sebrell (6) and a further consideration of the subject will be presented in a later communication. It will, however, be noted in this connection that a variation in the amount of the P-P factor as the underlying cause of this condition, is not supported by these tests. Lard and salt pork appear to be the most deficient in this respect, dried green peas next in order and haddock the least of all, yet the fatty degeneration was conspicuous in all except the dried green pea diet. The possibility that this may be the result of some unrecognized deficiency or toxic condition associated with the lard, salt pork, and canned haddock diets must be kept in mind.

III. Summary and Conclusions

1. The blacktongue preventive potency of lard, salt pork, dried green peas, and canned haddock has been studied.
2. Lard and salt pork are poor sources of the blacktongue preventive.
3. Canned haddock contains the blacktongue preventive factor, and when used in relatively large proportion the clinical manifestations of blacktongue are prevented.
4. Dried green peas contain the blacktongue preventive, but in relatively small amount.
5. Fifty per cent or more of the test animals on the lard, salt pork, and haddock diets showed postmortem evidence of fatty degeneration of the liver.

TABLE 1.—Composition of lard diet No. 302-A¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
Corn meal (whole, white) ²	310.0	23.3	13.0	204.0
Casein (leached) ³	80.0	72.5	.5	.....
Lard (pork fat).....	110.0	.....	110.0	.....
Cod-liver oil.....	10.0	.....	10.0	.....
Salt mixture ⁴	21.0	.....	.....	.....
Total nutrients.....	.....	95.8	133.5	204.0
Nutrients per 1,000 calories.....	.....	39.9	55.6	85.0

¹ The corn meal and salt mixture are stirred into water and cooked about 1½ hours. Then the other ingredients are well stirred in and the final weight of the mixture is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). This finished mixture is served to the dog in suitable caloric portions.

² Whole white maize meal, not sifted.

³ Commercial casein leached for a week in daily changes of acidulated water, after McCollum (7).

⁴ After Osborne and Mendel (8).

TABLE 2.—*Composition of salt pork diet No. 321*¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
Corn meal (whole, white) ²	310	23.3	13.0	204.0
Casein (leached) ³	65	58.9	.4	.....
Salt pork (edible portion) ⁴	153	12.9	110.5	.....
Cod-liver oil.....	10	.....	10.0	.....
Salt mixture ⁵	21	.....	.....	.....
Total nutrients.....	.....	95.1	133.9	204.0
Nutrients per 1,000 calories.....	.....	39.6	55.7	85.0

¹ The corn meal and salt pork are stirred into water and cooked about 1½ hours. Then the other ingredients are well stirred in and the final weight of the mixture is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). This finished mixture is served to the dog in suitable caloric portions.

² Whole white maize meal, not sifted.

³ Commercial casein leached for a week in daily changes of acidulated water after McCollum (7).

⁴ For method of preparation see text.

⁵ After Osborne and Mendel (8).

TABLE 3.—*Composition of dried green peas diet No. 325*¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
Dried peas (<i>Pisum sativum</i>).....	360	88.6	3.6	223.2
Casein (leached) ²	60	53.2	.3	.....
Sucrose.....	14	.....	.....	14.0
Cornstarch.....	90	.....	.....	81.0
Cottonseed oil.....	44	.....	44.0	.....
Cod-liver oil.....	15	.....	15.0	.....
Salt mixture ³	15	.....	.....	.....
Total nutrients.....	.....	141.8	62.9	318.2
Nutrients per 1,000 calories.....	.....	59.0	25.0	132.5

¹ The dried green peas (coarsely ground) and cornstarch are stirred into water and cooked about 1½ hours. Then the other ingredients are well stirred in and the final weight of the mixture is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). This finished mixture is served to the dog in suitable caloric portions.

² Commercial casein leached for a week in daily changes of acidulated water, after McCollum (7).

³ After Osborne and Mendel (8).

TABLE 4.—*Composition of haddock diet No. 315*¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
White corn meal (ab. sifted) ²	400	33.6	18.8	296.0
Cowpeas (<i>Vigna sinensis</i>).....	50	10.7	.7	30.4
Flaked haddock (canned) ³	385	82.4	.8	.....
Cane sugar.....	17	.....	.....	17.0
Cottonseed oil.....	25	.....	25.0	.....
Cod-liver oil.....	12	.....	12.0	.....
Sodium chloride.....	10	.....	.....	.....
Calcium carbonate.....	3	.....	.....	.....
Total nutrients.....	.....	126.7	57.3	343.4
Nutrients per 1,000 calories.....	.....	52.7	23.8	143.0

¹ The corn meal, cowpeas (coarsely ground), and sodium chloride are stirred into water and cooked about 1½ hours. Then the other ingredients are well stirred in and the final weight of the mixture is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). This finished mixture is served to the dog in suitable caloric portions.

² Whole white maize meal sifted as for human consumption.

³ Entire contents of can are used.

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- (7) McCollum, Simmonds, Shipley, and Park: Studies on experimental rickets, etc. Bull. Johns Hopkins Hosp., 1922, vol. 33, p. 398.
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Ctenocephalides, NEW GENUS OF FLEAS, TYPE *Pulex canis*

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The generic name *Ctenocephalus* Kolenati, 1859, Jahresh. Mähr.-Schles. Ges. (for 1858), 65, applied to certain well-known fleas, is preoccupied by *Ctenocephalus* Hawle and Corda, 1847, Prodrum. Monogr. d. böhm. Trilobiten, 26, a well-known trilobite, and, under Article 34 of the International Rules, must be rejected as an absolute homonym; and, incidentally, it preoccupies *Ctenocephalus* Linstow, 1904, type *tiara*, nematode. (Compare also *Ctenocephalus* 1929 misprint for *Ctenodactylus*, rodent.)

To meet the nomenclatorial situation we herewith propose the new genus *Ctenocephalides*, type species *Pulex canis* Curtis, 1826, Brit. Entom., v. 3, no. 114, figs. A-E, 8, with the following diagnosis:

Frontal notch absent; eye present; labial palpi 4-segmented; club of antenna distinctly segmented only on the posterior side; two bristles on gena, an ocular and an oral. Genae and pronotum with ctenidia (combs); genal ctenidia horizontal, of about seven (rarely six) to ten or eleven rather long, pointed, and recurved spines. A strong incrassation from the antennal groove upward; upper margin of antennal groove in male with a patch of spiniform bristles (spinelets). Pronotal ctenidium of 16-18 spines. One antepygial bristle on each side; spiniform bristles on inner side of hind coxae; fifth tarsal segment of all legs with four bristles on each side besides a thin and long subapical hair.

It will be noticed that the type species of the new genus is *canis*. The type species of *Ctenocephalus* Kolenati, 1859, is *novemdentatus*, subjective synonym of *canis*. Theoretically *Ctenocephalus* 1859 becomes a subjective synonym of *Ctenocephalides*, since *novemdentatus* is a subjective synonym of *canis*; for all practical purposes, however, *Ctenocephalus* 1859 is an unquestioned synonym of *Ctenocephalides*. To avoid having a synonym (*novemdentatus*) type species we propose a new genus instead of renaming the old genus. The new name is based upon the old name and the Greek suffix *ιδης* = *ides*, thus denoting the son (lineal descendant) of *Ctenocephalus* and preserving its place very closely in alphabetical file.

The new genus contains *canis* Curtis, 1826, and *felis* Bouché, 1835, both of them practically cosmopolitan insects which occur on man, *canis* having dogs (*Canis familiaris*) as type host and Great Britain as type locality, and *felis* having cats (*Felis domestica*) as type host and Europe as type locality. The new genus also contains the following less well-known species of fleas: *Ctenocephalides arabicus* (Jordan, 1925); *C. connatus* (Jordan, 1925); *C. conversus* (Jord. & Roths., 1913); *C. crataepus* (Jordan, 1925); *C. craterus* (Jord. & Roths., 1913); *C. felis orientis* (Jordan, 1925); *C. felis strongylus* (Jordan, 1925); *C. "leonis"* (Lyon, 1915); *C. rosmarus* (Roths., 1907); and *C. wollastoni* (Roths., 1908).

Weiss, 1920 (Bull. Soc. d'Hist. nat. de l'Afrique du Nord, v. 11 (9), Dec. 15, 171), has proposed *Metapsylla* as a subgenus of *Pulex*.¹

Although he did not designate a type species for *Metapsylla*, it seems clear that he had especially in mind fleas occurring on *Erinaceus*, sensu lato, and of these he mentions two species, namely, *Pulex erinacei* and *Archaeopsylla polymorphus*, and it seems to us probable that he considered *canis* as consubgeneric with these.

Theoretical arguments can be advanced against the selection of any one of these three species as type. In view of the ambiguous status of *Metapsylla*, leading with certainty to differences of opinion and, therefore, nomenclatorial confusion, we feel that the name

¹ "Aux mois de mai et juin 1918, nous avons examiné plusieurs Hérissons de la Tunisie centrale (région de Mahdia et de la Chebba). Ils étaient tous porteurs d'une Puce affine au *Pulex erinacei*, Bouché.

"Contrairement à ce que nous avons observé dans l'île de Djerba, le Hérisson (*Erinaceus algirus*, Duv.) a toujours été, dans le Sahel tunisien, trouvé uniquement infesté par *Archaeopsylla polymorphus* n. sp. qui est peut-être une forme de *stégéation*.

"L'appareil génital ♂ est, à notre connaissance, inconnu chez *Cl. erinacei*, Bouché. Taschenberg signale à peine l'appareil génital externe.

"Les Pulicides à dents aux joues et au pronotum parasitant le Hérisson montrent des caractères du genre *Pulex*. Nous indiquerons: forme et nombre des soies latérales du cinquième article tarsal des pattes postérieures, et présence d'un peigne à petites dents sur le côté interne et terminal des hanches postérieures.

"Nonobstant ces caractères héréditaires (*Cl. canis*, *P. canis*, Tasch. les présente également), ils ont été simultanément rangés dans le genre *Archaeopsylla* et le genre *Ctenocephalus*. Il nous paraît plus naturel de les ranger dans un sous-genre nouveau du genre *Pulex*, le sous-genre *Metapsylla*, qui rappelle une forme inconstante.

"Provisoirement, nous laissons notre nouvel Aphaniptère dans le genre *Archaeopsylla*, sous le nom d'*Archaeopsylla polymorphus*, qui rappelle un groupement de Pulicides dont les spécimens sont différents les uns des autres, justifiant d'être défini comme espèce de passage entre les genres *Pulex* et *Ctenocephalus*."

should be sunk into absolute synonymy if this is anyway possible; and as no author (so far as we have record) seems to have cited *Metapsylla* since its original publication, no nomenclatorial hardship can be caused by a course of this kind.

In order to settle this question as definitely as possible, we here designate *Pulex erinacei* Bouché as type species of *Metapsylla*, thus sinking this generic name of 1920 as an absolute synonym of *Archaeopsylla* Dampf, 1908, type by original designation *Ceratophyllus erinacei* Leach in Curtis (*nomen nudum*) = *Pulex erinacei* Bouché.

To select *polymorphus* as type would cause subjective instead of objective synonymy.

To select *Ctenocephalus canis* as type would raise the question whether Weiss cited this species simply in anatomical comparison or as congeneric with *erinacei* and *polymorphus*. While we believe personally that he intended to place *canis* in *Metapsylla*, we admit the possibility of a difference of opinion on this point and therefore eliminate *canis* from consideration as type species.

COURT DECISION RELATING TO PUBLIC HEALTH

City held liable for damage resulting from sewage being forced back on to private property because of obstructed or inadequate sewer.—(Washington Supreme Court; *Boyer et ux. v. City of Tacoma*, 286 P. 659; decided Apr. 9, 1930.) The plaintiffs' property was connected with a sewer, which connection was required by the defendant city under the terms of a city ordinance. The connection conformed to the ordinance and was approved by the city's inspectors. Either because of some obstruction in, or the overtaxing of, the sewer, the sewage was forced back through the drainpipes of the plaintiffs into their basement. The sewer had been installed approximately 20 years before the flooding of the plaintiffs' premises and, when installed, it was undoubtedly of ample size. However, by reason of the growth of the territory served, it had become inadequate. No extraordinary storm conditions existed at the times when the premises were flooded.

An action was brought against the city and plaintiffs lost in the trial court. On appeal the supreme court stated the question as follows:

Is the city liable under circumstances such as these for sewage discharged on plaintiffs' property, they having been compelled by ordinance to connect with the sewer, the connection having been made in the manner approved by the city, and there being no negligence of any kind on their part?

The appellate court held that there was liability on the city's part, saying:

* * * The theory of all of the cases which we have examined which hold the city liable under circumstances such as we have outlined above seems to be that the property owner is required to connect with the sewer; that he is not permitted to dispose of his sewage in any other way than the one way provided by the city; that he has no power or authority to remove the cause, or to in any way remedy the defect from which his injury arises; that the city alone has the power and the means to remedy the defective sewer or to replace an inadequate sewer; that no person should be required to suffer an injury caused by an agency over which he has no control and over which the city has absolute control; and that if an injury is inflicted by such an agency, he should be properly compensated therefor. We think this is the better rule and is well supported by both reason and authority.

DEATHS DURING WEEK ENDED MAY 24, 1930

Summary of information received by telegraph from industrial insurance companies for the week ended May 24, 1930, and corresponding week of 1929. (From the Weekly Health Index, May 28, 1930, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 24, 1930	Corresponding week, 1929
Policies in force.....	75,792,860	74,200,627
Number of death claims.....	14,742	14,256
Death claims per 1,000 policies in force, annual rate.....	10.1	10.0

Death from all causes in certain large cities of the United States during the week ended May 24, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, May 28, 1930, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 24, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 24, 1930 ¹
	Total deaths	Death rate ¹		Week ended May 24, 1930	Corresponding week, 1929	
Total (65 cities).....	7,047	12.3	12.4	653	740	57
Akron.....	41			6	9	55
Albany ⁴	36	15.6	17.8	2	4	44
Atlanta.....	63	12.9	13.3	8	9	83
White.....	34			3	1	95
Colored.....	29	(⁵)	(⁵)	5	8	79
Baltimore ⁴	189	11.9	12.0	13	25	44
White.....	140			7	14	30
Colored.....	49	(⁵)	(⁵)	6	11	97
Birmingham.....	55	12.9	14.5	8	8	75
White.....	20			4	3	62
Colored.....	35	(⁵)	(⁵)	4	5	95
Boston.....	228	14.9	13.6	27	27	76
Bridgeport.....	28			3	4	51
Buffalo.....	165	15.5	13.5	12	14	53
Cambridge.....	24	9.9	7.0	2	0	37
Camden.....	26	10.0	12.3	5	5	91
Canton.....	27	12.1	9.4	0	4	0
Chicago ⁴	704	11.6	12.3	68	114	60
Fall River ⁴	25	9.7	10.5	3	1	60
Flint.....	34	11.9	12.3	6	4	70
Fort Worth.....	29	8.9	8.6	2	3	-----
White.....	25			1	0	-----
Colored.....	4	(⁵)	(⁵)	1	3	-----
Grand Rapids.....	43	13.7	13.3	7	5	107
Houston.....	79			11	6	-----
White.....	43			8	4	-----
Colored.....	36	(⁵)	(⁵)	3	2	-----

Deaths from all causes in certain large cities of the United States during the week ended May 24, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, May 28, 1930, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 24, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 24, 1930
	Total deaths	Death rate		Week ended May 24, 1930	Corresponding week, 1929	
Indianapolis.....	123	16.8	13.5	6	8	45
White.....	111			3	7	26
Colored.....	12	(^b)	(^b)	3	1	161
Jersey City.....	67	10.8	11.2	7	6	61
Kansas City, Kans.....	29	8.8	13.7	3	4	71
White.....	13			2	2	53
Colored.....	7	(^b)	(^b)	1	2	217
Kansas City, Mo.....	88	11.7	13.9	7	8	54
Knoxville.....	26	12.9	12.9	1	5	23
White.....	20			1	5	26
Colored.....	6	(^b)	(^b)	0	0	0
Los Angeles.....	286			18	17	55
Louisville.....	62	9.8	12.3	3	2	26
White.....	45			2	2	20
Colored.....	17	(^b)	(^b)	1	0	72
Lowell.....	20			4	4	95
Lynn.....	27	13.3	13.3	3	4	76
Memphis.....	80	21.9	18.1	4	7	48
White.....	28			0	3	0
Colored.....	52	(^b)	(^b)	4	4	135
Milwaukee.....	105	10.1	12.1	9	23	45
Minneapolis.....	78	8.9	9.5	5	5	32
Nashville.....	33	12.3	14.9	4	6	62
White.....	23			3	6	62
Colored.....	10	(^b)	(^b)	1	0	63
New Bedford.....	27			3	2	77
New Haven.....	41	11.4	8.9	1	0	19
New Orleans.....	139	16.9	16.5	14	13	81
White.....	69			5	6	44
Colored.....	70	(^b)	(^b)	9	7	151
Cincinnati.....	101			8	10	47
Cleveland.....	198	10.2	11.5	17	13	51
Columbus.....	78	13.6	12.4	10	10	98
Dallas.....	47	11.3	10.8	7	5	
White.....	30			4	3	
Colored.....	17	(^b)	(^b)	3	2	
Dayton.....	35	9.9	9.6	3	5	44
Denver.....	62	11.0	12.1	4	4	42
Des Moines.....	35	12.0	13.0	2	2	35
Detroit.....	322	12.2	12.4	34	44	53
Duluth.....	21	9.4	5.4	4	0	108
El Paso.....	34	15.0	15.0	8	3	
Erie.....	35			4	1	85
New York.....	1,510	13.1	12.5	171	148	72
Bronx Borough.....	202	11.1	11.1	20	17	47
Brooklyn Borough.....	534	12.1	11.1	65	63	69
Manhattan Borough.....	601	17.9	17.5	70	58	115
Queens Borough.....	136	8.3	6.8	14	7	41
Richmond Borough.....	37	12.8	17.0	2	3	37
Newark, N. J.....	127	14.0	11.0	6	8	31
Oakland.....	68	12.9	10.3	5	1	60
Oklahoma City.....	30			5	1	98
Omaha.....	49	11.5	12.9	3	4	34
Paterson.....	50	10.8	9.4	2	1	35
Philadelphia.....	423	10.7	11.8	34	29	50
Pittsburgh.....	175	13.5	13.9	14	25	51
Portland, Oreg.....	61			0	2	0
Providence.....	69	12.6	9.7	7	8	64
Richmond.....	53	14.2	12.9	1	6	15
White.....	32			0	1	0
Colored.....	21	(^b)	(^b)	1	5	44
Rochester.....	72	11.4	12.9	6	5	53
St. Louis.....	215	13.2	14.0	11	19	36
St. Paul.....	56			2	7	20
Salt Lake City.....	29	11.0	14.4	4	8	63
San Antonio.....	67	16.0	19.6	13	19	
San Diego.....	45			6	2	124
San Francisco.....	167	14.9	13.9	5	8	36
Schenectady.....	23	12.9	11.7	3	2	94
Seattle.....	72	9.8	8.6	2	3	20

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended May 24, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, May 28, 1930, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 24, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 24, 1930
	Total deaths	Death rate		Week ended May 24, 1930	Corresponding week, 1929	
Somerville.....	18	9.1	6.1	1	1	33
Spokane.....	23	11.0	11.0	2	0	52
Springfield, Mass.....	33	11.5	16.0	4	3	63
Syracuse.....	53	13.9	15.7	6	6	74
Tacoma.....	25	11.8	9.9	4	1	103
Toledo.....	54	9.0	13.8	3	5	27
Trenton.....	31	11.6	13.5	1	2	19
Utica.....	29	14.5	17.0	3	6	85
Washington, D. C.....	132	12.5	12.8	11	12	64
White.....	85			5	8	43
Colored.....	47	(¹)	(¹)	6	4	106
Waterbury.....	15			0	3	0
Wilmington, Del.....	23	9.3	10.1	3	1	68
Worcester.....	50	13.2	12.9	1	1	13
Yonkers.....	23	9.9	6.9	3	4	72
Youngstown.....	35	10.5	8.4	5	4	78

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Data for 73 cities.

⁴ Deaths for week ended Friday.

⁵ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 28; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 28; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended May 24, 1930, and May 25, 1929

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 24, 1930, and May 25, 1929

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929
New England States:								
Maine.....	2	2	2	3	49	77	0	0
New Hampshire.....		1			38	63	0	0
Vermont.....					50	1	0	0
Massachusetts.....	44	87	4	7	1,441	573	11	6
Rhode Island.....	3	8			29	79	0	0
Connecticut.....	9	39	4	12	50	335	3	2
Middle Atlantic States:								
New York.....	121	317	15	13	2,302	1,123	10	27
New Jersey.....	80	133	3	6	1,155	306	4	8
Pennsylvania.....	90	150			1,356	1,801	9	11
East North Central States:								
Ohio.....	26	31	14	4	628	931	1	10
Indiana.....	9	3			169	600	4	1
Illinois.....	144	220	5	72	610	2,222	6	18
Michigan.....	64	218	5	11	1,514	921	18	62
Wisconsin.....	12	23	9	10	598	1,423	0	6
West North Central States:								
Minnesota.....	14	15	2		185	649	1	0
Iowa.....	9	1			293	96	2	2
Missouri.....	28	52	4	4	63	163	8	15
North Dakota.....	6	19			19	88	0	0
South Dakota.....	2	1				88	0	0
Nebraska.....	15	13			137	317	0	1
Kansas.....	5	5			512	807	0	3
South Atlantic States:								
Delaware.....	1	2			7	8	0	0
Maryland ¹	23	13	5	17	73	58	1	1
District of Columbia.....	7	10	1		40	39	0	0
Virginia.....								
West Virginia.....	5	12	9	13	70	275	1	0
North Carolina.....	26	20	5		48	20	5	2
South Carolina.....	15	12	177	234	43	6	1	0
Georgia.....	12	1	12	21	131	11	3	1
Florida.....	5	3	2		210	85	0	0

¹ New York City only.

² Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 24, 1930, and May 25, 1929—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929
East South Central States:								
Kentucky.....	3	4			65	44	1	0
Tennessee.....	6	5	13	21	262	30	9	1
Alabama.....	8	15	18	15	116	123	9	2
Mississippi.....	7	3					1	0
West South Central States:								
Arkansas.....	2	2	37	25	69	12	2	1
Louisiana.....	9	10	4	7	39	72	1	6
Oklahoma ¹	9	4	17	40	205	22	2	2
Texas.....	34	18	6	37	232	281	0	0
Mountain States:								
Montana.....					20	101	0	2
Idaho.....					21	3	2	3
Wyoming.....	2	1			74	76	0	2
Colorado.....	10	8			749	22	1	4
New Mexico.....	4	5		2	31	4	0	1
Arizona.....	3		3		108	1	1	4
Utah ¹	3	1	4	4	327	3	2	5
Pacific States:								
Washington.....	3	15			743	308	3	3
Oregon.....	3	3	9	20	81	159	0	1
California.....	54	50	9	28	2,221	129	4	18

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929
New England States:								
Maine.....	0	0	14	16	0	0	4	2
New Hampshire.....	0	0	14	13	0	1	0	1
Vermont.....	0	0	3	9	0	0	0	2
Massachusetts.....	0	2	239	245	0	24	3	8
Rhode Island.....	0	0	15	7	0	0	1	1
Connecticut.....	0	0	63	58	0	4	1	4
Middle Atlantic States:								
New York.....	0	1	433	438	8	5	14	16
New Jersey.....	0	0	205	140	0	0	5	6
Pennsylvania.....	1	0	308	420	0	0	10	17
East North Central States:								
Ohio.....	1	0	154	152	98	82	9	5
Indiana.....	1	0	110	230	145	77	4	2
Illinois.....	2	3	375	400	81	123	6	13
Michigan.....	0	1	188	478	83	52	5	4
Wisconsin.....	1	1	196	153	0	21	0	6
West North Central States:								
Minnesota.....	0	1	83	97	13	6	4	2
Iowa.....	0	0	33	135	90	47	0	0
Missouri.....	0	0	105	53	38	35	0	16
North Dakota.....	0	1	15	37	19	13	0	2
South Dakota.....	0	0	8	17	21	38	0	0
Nebraska.....	0	0	46	70	52	120	0	12
Kansas.....	0	0	51	111	55	70	3	3
South Atlantic States:								
Delaware.....	0	0	11	4	0	1	0	0
Maryland ¹	0	0	56	99	0	0	6	6
District of Columbia.....	0	0	16	10	0	0	1	0
Virginia.....	1							
West Virginia.....	0	0	20	10	43	11	10	7
North Carolina.....	0	1	23	17	3	4	14	7
South Carolina.....	0	1	6	5	5	4	24	29
Georgia.....	0	0	18	9	0	0	8	28
Florida.....	2	1	0	5	0	1	3	3

¹ Week ended Friday.

² Exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 24, 1930, and May 25, 1929—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929	Week ended May 24, 1930	Week ended May 25, 1929
East South Central States:								
Kentucky.....	0	0	38	73	0	9	4	3
Tennessee.....	0	0	38	21	11	7	11	14
Alabama.....	2	1	12	8	3	2	9	19
Mississippi.....	0	0	7	3	3	2	10	9
West South Central States:								
Arkansas.....	0	0	5	8	4	2	2	6
Louisiana.....	3	0	14	25	2	3	13	7
Oklahoma ¹	0	0	19	16	96	36	4	4
Texas.....	0	0	28	55	38	57	1	7
Mountain States:								
Montana.....	0	0	32	14	2	9	0	0
Idaho.....	0	1	5	4	0	4	1	1
Wyoming.....	0	0	2	14	11	7	0	0
Colorado.....	0	0	19	15	11	23	3	1
New Mexico.....	0	0	7	3	14	6	3	0
Arizona.....	1	0	8	5	5	3	5	6
Utah ²	0	0	5	9	2	1	0	0
Pacific States:								
Washington.....	0	0	37	42	44	64	1	1
Oregon.....	0	0	26	15	23	20	0	1
California.....	11	3	109	409	64	66	18	7

¹ Week ended Friday.² Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Infl- uenza	Ma- laria	Mea- sles	Pella- gra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
March, 1930										
Delaware.....	2	15	5		45		0	56	0	4
April, 1930										
Idaho.....	15	4			310		0	33	26	5
Illinois.....	56	605	63	7	3,306		2	2,224	656	26
Iowa.....	27	30			1,847		1	331	469	2
Missouri.....	69	138	66	18	756	1	0	653	436	24
North Carolina.....	26	118	135		175	143	2	164	86	10
Oklahoma ¹	9	34	141	115	1,153	59	0	108	427	18

¹ Exclusive of Oklahoma City and Tulsa.

March, 1930		Cases		Chicken pox—Continued.		Cases	
Delaware:		Cases		Iowa.....		295	
Chicken pox.....	44			Missouri.....		415	
Mumps.....	1			North Carolina.....		1,067	
Whooping cough.....	14			Oklahoma ¹		68	
April, 1930				Dysentery:			
Actinomycesis:				Illinois.....		13	
Illinois.....	1			Oklahoma ¹		4	
Chicken pox:				German measles:			
Idaho.....	40			Illinois.....		261	
Illinois.....	1,325			Iowa.....		2	
				North Carolina.....		105	

¹ Exclusive of Oklahoma City and Tulsa.

Lead poisoning:	Cases	Tetanus:	Cases
Illinois.....	17	Illinois.....	2
Lethargic encephalitis:		Missouri.....	1
Illinois.....	13	Oklahoma ¹	2
Mumps:		Trachoma:	
Idaho.....	70	Illinois.....	5
Illinois.....	1,130	Missouri.....	31
Iowa.....	150	Oklahoma ¹	11
Missouri.....	208	Trench mouth:	
Oklahoma ¹	15	Oklahoma.....	3
Ophthalmia neonatorum:		Tularaemia:	
Illinois.....	42	Illinois.....	2
Missouri.....	4	North Carolina.....	1
North Carolina.....	1	Undulant fever:	
Paratyphoid fever:		Illinois.....	6
Illinois.....	2	Iowa.....	12
North Carolina.....	5	Missouri.....	10
Puerperal fever:		Vincent's angina:	
Illinois.....	6	Illinois.....	1
Rabies in animals:		Oklahoma ¹	3
Illinois.....	4	Whooping cough:	
Missouri.....	4	Idaho.....	21
Rabies in man:		Illinois.....	765
Illinois.....	1	Iowa.....	72
Rocky Mountain spotted or tick fever:		Missouri.....	181
Idaho.....	2	North Carolina.....	1,342
Septic sore throat:		Oklahoma ¹	124
Illinois.....	8		
Missouri.....	20		
North Carolina.....	3		
Oklahoma ¹	24		

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 95 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,690,000. The estimated population of the 89 cities reporting deaths is more than 30,180,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended May 17, 1930, and May 18, 1929

	1930	1929	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	888	1,272	
95 cities.....	464	748	806
Measles:			
46 States.....	19,401	14,413	
95 cities.....	7,338	5,381	
Meningococcus meningitis:			
46 States.....	175	303	
95 cities.....	78	159	
Poliomyelitis:			
47 States.....	38	33	
Scarlet fever:			
46 States.....	3,470	4,297	
95 cities.....	1,397	1,754	1,214
Smallpox:			
46 States.....	1,302	954	
95 cities.....	133	57	70
Typhoid fever:			
46 States.....	238	200	
95 cities.....	51	53	45
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	649	647	
Smallpox:			
89 cities.....	0	0	

¹ Exclusive of Oklahoma City and Tulsa.

City reports for week ended May 17, 1930

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1921 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	5	1	0		0	5	34	
New Hampshire:								
Concord	0	0	0		0	0	0	
Manchester	0	1	0		0	0	0	
Nashua	0	1	0		0	0	0	
Vermont:								
Barre	0	0	0		0	6	0	
Massachusetts:								
Boston	41	38	31	1	0	496	65	23
Fall River	1	3	2		0	2	4	
Springfield	12	2	2		0	1	8	
Worcester	25	3	0		0	240	0	
Rhode Island:								
Pawtucket	8	0	2		0	0	0	
Providence	12	6	3		0	9	1	
Connecticut:								
Bridgeport	1	5	3		0	1	1	
Hartford	5	5	1		0	1	0	
New Haven	9	1	0		0	10	10	
MIDDLE ATLANTIC								
New York:								
Buffalo	25	10	6		0	20	9	21
New York	203	260	92	16	12	1,936	153	177
Rochester	9	8	1		0	28	1	6
Syracuse	10	3	0		0	16	39	5
New Jersey:								
Camden	7	7	0		1	4	1	5
Newark	35	14	24	2	0	281	32	11
Trenton	2	2	7	1	0	9	0	1
Pennsylvania:								
Philadelphia	13	58	12		1	359	126	19
Pittsburgh	53	16	21		1	292	29	27
Reading	15	2	0		0	4	4	1
Scranton	4	3	0		0	0	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	6	6	5		0	92	11	8
Cleveland	115	22	7	4	1	7	72	14
Columbus	17	3	4	3	2	103	3	2
Toledo	50	3	0	2	2	38	36	4
Indiana:								
Fort Wayne	1	1	0		0	0	0	0
Indianapolis	43	3	1		0	16	10	8
South Bend		1						
Terre Haute	6	0	0		0	52	1	1
Illinois:								
Chicago	159	83	87	3	2	44	86	39
Springfield	1	0	1		0	2	1	0
Michigan:								
Detroit	69	43	31	5	2	775	87	23
Flint	22	3	1		0	191	6	2
Grand Rapids	5	1	8		0	0	0	0

City reports for week ended May 17, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL—contd.								
Wisconsin:								
Kenosha.....	2	0	0	-----	0	0	0	1
Madison.....	4	1	1	-----	0	24	1	9
Milwaukee.....	122	11	1	-----	0	10	91	0
Racine.....	1	1	0	-----	0	10	0	0
Superior.....	11	1	0	-----	0	0	0	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	3	0	0	-----	0	22	0	2
Minneapolis.....	95	14	2	-----	1	39	42	6
St. Paul.....	38	9	1	-----	0	2	12	5
Iowa:								
Des Moines.....	1	1	1	-----		2	1	-----
Sioux City.....		0		-----				
Waterloo.....	20	0	1	-----		2	2	-----
Missouri:								
Kansas City.....	23	3	2	-----	0	10	4	15
St. Joseph.....	2	0	0	-----	0	0	0	0
St. Louis.....	47	36	25	1	-----	22	16	-----
North Dakota:								
Fargo.....	4	0	0	-----	0	0	27	1
Grand Forks.....	0	0	0	-----		0	1	-----
South Dakota:								
Aberdeen.....	2	0	0	-----		42	1	-----
Nebraska:								
Omaha.....	7	2	7	-----	0	36	1	4
Kansas:								
Topeka.....	12	1	0	-----	0	126	24	1
Wichita.....	7	1	0	-----	0	78	0	2
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	1	1	-----	0	5	1	5
Maryland:								
Baltimore.....	161	21	12	8	4	43	10	32
Cumberland.....	8	0	0	-----	0	0	0	1
Frederick.....	2	0	0	-----	0	0	0	3
District of Columbia:								
Washington.....	38	11	4	-----	0	47	0	8
Virginia:								
Lynchburg.....	4	0	1	-----	0	38	10	2
Norfolk.....	44	1	0	-----	0	16	80	2
Richmond.....	4	1	3	-----	3	1	1	4
Roanoke.....	5	1	0	-----	0	258	0	2
West Virginia:								
Charleston.....	15	0	2	-----	0	1	3	4
Wheeling.....	7	1	0	-----	0	9	0	2
North Carolina:								
Raleigh.....	4	0	1	-----	0	0	0	0
Wilmington.....	6	0	0	-----	0	0	0	1
Winston-Salem.....	6	0	0	-----	0	20	5	1
South Carolina:								
Charleston.....	0	0	0	8	0	0	0	1
Columbia.....	1	1	0	-----	0	0	1	5
Georgia:								
Atlanta.....	2	1	0	1	2	63	3	9
Brunswick.....	1	0	0	-----	0	0	1	0
Savannah.....	1	0	3	3	0	5	0	2
Florida:								
Miami.....	6	0	3	-----	0	12	7	2
St. Petersburg.....		0		-----	0			1
Tampa.....	8	1	0	-----	1	123	7	3
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	-----	0	1	0	2
Tennessee:								
Memphis.....	27	1	1	-----	3	2	9	1
Nashville.....	10	0	1	-----	1	21	0	4

City reports for week ended May 17, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL—continued								
Alabama:								
Birmingham.....	5	2	1		2	9	3	6
Mobile.....	0	0	3		0	2	1	0
Montgomery.....	0	0	0			25	2	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0			46	0	
Little Rock.....	2	0	0		0	2	0	
Louisiana:								
New Orleans.....	0	7	0	1	0	3	0	10
Shreveport.....	3	0	0		0	11	5	0
Oklahoma:								
Oklahoma City.....	0	2	2	1	1	5	0	6
Tulsa.....	14	1	0			27	2	
Texas:								
Dallas.....	3	3	5	1	0	141	4	4
Fort Worth.....	11	2	1	10		0	1	0
Galveston.....	0	0	0		0	0	0	0
Houston.....	4	3	5		0	2	0	5
San Antonio.....	0	2	0		1	6	0	3
MOUNTAIN								
Montana:								
Billings.....	0	0	0		0	5	0	0
Great Falls.....	1	1	0		0	0	11	0
Helena.....	0	0	0		0	0	0	1
Missoula.....	0	0	0		0	0	0	0
Idaho:								
Boise.....	2	1	0		0	0	2	1
Colorado:								
Denver.....		9						
Pueblo.....	7	1	0		0	13	102	1
New Mexico:								
Albuquerque.....	10	6	0		0	7	11	2
Arizona:								
Phoenix.....	0	0	0		0	14	0	4
Utah:								
Salt Lake City.....	9	3	0		0	249	4	0
Nevada:								
Reno.....	0	0	0		0	3	1	0
PACIFIC								
Washington:								
Seattle.....	42	3	0			238	80	
Spokane.....	15	2	1			0	0	
Tacoma.....	3	1	0		0	143	3	3
Oregon:								
Portland.....	16	6	4		0	46	10	3
Salem.....	11	0	0		0	4	0	0
California:								
Los Angeles.....	44	34	12	22	3	317	84	8
Sacramento.....	8	2	0	1	1	24	24	2
San Francisco.....	29	15	8	4	1	103	75	6

City reports for week ended May 17, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	2	2	0	0	0	3	0	0	0	0	29
New Hampshire:											
Concord.....	0	0	0	0	0	0	0	0	0	0	8
Manchester.....	3	0	0	0	0	0	0	0	0	0	19
Nashua.....	0	0	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	0	1
Massachusetts:											
Boston.....	64	50	0	0	0	23	2	4	0	36	223
Fall River.....	4	7	0	0	0	1	0	0	0	0	34
Springfield.....	7	5	0	0	0	5	0	0	0	7	35
Worcester.....	7	8	0	0	0	1	0	0	0	24	33
Rhode Island:											
Pawtucket.....	2	2	0	0	0	0	0	0	0	6	13
Providence.....	9	15	0	0	0	2	0	0	0	13	63
Connecticut:											
Bridgeport.....	10	9	0	0	0	2	0	0	0	0	28
Hartford.....	4	2	0	0	0	1	0	0	0	2	47
New Haven.....	5	8	0	0	0	2	0	0	0	4	44
MIDDLE ATLANTIC											
New York:											
Buffalo.....	24	32	0	0	0	7	1	1	0	20	140
New York.....	268	238	0	0	0	102	9	11	0	85	1,438
Rochester.....	11	18	0	0	0	1	0	1	0	0	63
Syracuse.....	9	7	0	0	0	1	0	0	0	40	39
New Jersey:											
Camden.....	5	2	0	0	0	1	0	0	0	1	34
Newark.....	28	24	0	0	0	7	0	0	0	10	93
Trenton.....	3	11	0	0	0	5	0	1	0	0	41
Pennsylvania:											
Philadelphia.....	90	122	0	0	0	41	2	1	0	13	507
Pittsburgh.....	31	31	0	0	0	9	0	0	0	38	165
Reading.....	4	4	0	0	0	3	0	0	0	3	38
Scranton.....	2	5	0	0	0	0	1	0	0	4	-----
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	16	18	2	3	0	10	0	0	0	3	113
Cleveland.....	37	56	0	0	0	13	2	0	0	64	197
Columbus.....	8	3	2	2	0	7	0	0	0	5	80
Toledo.....	10	20	1	9	0	5	0	0	0	5	69
Indiana:											
Fort Wayne.....	3	1	2	2	0	0	0	0	0	0	18
Indianapolis.....	13	24	8	8	0	0	1	0	0	13	-----
South Bend.....	4		0				0				
Terre Haute.....	2	4	0	0	0	0	0	0	0	1	15
Illinois:											
Chicago.....	109	219	2	1	0	37	2	3	0	63	577
Springfield.....	4	3	0	0	0	0	1	0	0	3	13
Michigan:											
Detroit.....	104	99	1	3	0	23	2	0	0	80	276
Flint.....	7	11	2	2	0	0	0	0	0	15	27
Grand Rapids.....	8	12	0	1	0	0	0	0	0	5	31
Wisconsin:											
Kenosha.....	1	2	0	0	0	2	0	0	0	8	12
Madison.....	2	3	0	0	0	0	0	0	0	10	7
Milwaukee.....	4	27	0	1	0	8	0	0	0	39	131
Racine.....	27	4	0	0	0	0	0	0	0	4	10
Superior.....	2	4	0	0	0	0	0	0	0	0	13
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	1	0	0	0	0	0	0	0	6	31
Minneapolis.....	37	16	2	0	0	4	0	0	0	5	102
St. Paul.....	22	6	0	0	0	1	0	0	0	29	49

City reports for week ended May 17, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Des Moines	5	9	2	21			0	0		0	35
Sioux City	1		0				0				
Waterloo	2	0	1	23			0	0		1	
Missouri:											
Kansas City	11	13	1	1	0	6	1	3	0	8	98
St. Joseph	3	9	1	3	0	0	0	0	0	0	25
St. Louis	29	63	2	5	0	14	1	1	1	15	166
North Dakota:											
Fargo	1	1	0	0	0	1	0	0	0	2	10
Grand Forks	1	0	1	0			0	0		0	
South Dakota:											
Aberdeen	0	0	0	10			0	0		6	
Nebraska:											
Omaha	3	5	3	25	0	5	0	0	0	1	44
Kansas:											
Topeka	2	1	0	3	0	0	0	0	0	13	8
Wichita	3	14	1	0	0	0	0	0	0	3	29
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	10	0	0	0	0	0	0	0	1	28
Maryland:											
Baltimore	33	51	0	0	0	17	2	0	0	22	224
Cumberland	0	0	0	0	0	0	0	0	0	0	11
Frederick	0	0	0	0	0	0	0	0	0	0	8
District of Col.:											
Washington	21	9	1	0	0	10	0	2	0	6	132
Virginia:											
Lynchburg	0	0	0	0	0	2	1	0	0	4	18
Norfolk	1	0	0	0	0	2	0	0	0	1	
Richmond	3	2	0	0	0	2	0	1	0	1	60
Roanoke	0	0	0	0	0	2	0	0	0	1	21
West Virginia:											
Charleston	1	1	1	0	0	0	0	0	0	10	12
Wheeling	2	0	0	0	0	0	1	0	0	9	17
North Carolina:											
Raleigh	0	0	0	2	0	0	0	1	0	2	12
Wilmington	0	0	1	0	0	1	0	0	0	7	13
Winston-Salem	0	0	1	0	0	4	0	0	0	4	15
South Carolina:											
Charleston	0	0	0	0	0	3	1	0	0	3	20
Columbia	0	0	0	0	0	0	1	0	0	3	19
Georgia:											
Atlanta	4	13	5	0	0	3	1	0	0	8	74
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	1	0	1	0	0	4	1	1	2	0	40
Florida:											
Miami	0	1	0	0	0	0	0	0	0	0	22
St. Petersburg	0		0		0	2	0	0	0	19	
Tampa	1	0	0	0	0	2	1	2	0	0	22
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	0	2	0	0	0	0	0	0	18
Tennessee:											
Memphis	6	2	1	0	0	8	1	7	0	9	88
Nashville	2	1	1	10	0	3	0	0	0	4	44
Alabama:											
Birmingham	1	0	3	0		5	1	0	0	4	60
Mobile	0	0	0	0		2	0	0	0	0	23
Montgomery	0	0	0	0			0	0		0	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0			0	0		3	
Little Rock	0	0	0	0	0	1	1	0	0	0	

City reports for week ended May 17, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL—continued											
Louisiana:											
New Orleans.....	7	8	1	0	0	15	2	10	0	0	164
Shreveport.....	0	0	1	0	0	2	0	0	0	2	37
Oklahoma:											
Oklahoma City.....	0	6	2	20	0	1	0	1	0	0	34
Tulsa.....	2	2	2	4			0	0		11	
Texas:											
Dallas.....	3	8	2	0	0	2	1	0	0	4	55
Fort Worth.....	1	2	5	3	0	0	1	0	0	0	
Galveston.....	0	0	0	0	0	0	0	0	0	0	12
Houston.....	2	4	1	5	0	3	1	0	0	0	66
San Antonio.....	0	1	0	1	0	9	1	0	0	0	78
MOUNTAIN											
Montana:											
Billings.....	0	2	0	0	0	0	0	0	0	0	4
Great Falls.....	1	6	1	0	0	0	0	0	0	0	9
Helena.....	0	0	0	0	0	0	0	0	0	0	1
Missoula.....	1	0	0	1	0	0	0	0	0	0	7
Idaho:											
Boise.....	0	1	1	1	0	1	0	0	0	1	8
Colorado:											
Denver.....	11		1				0				
Pueblo.....	1	0	0	0	0	0	0	0	0	7	9
New Mexico:											
Albuquerque.....	0	2	0	0	0	3	0	0	0	0	13
Arizona:											
Phoenix.....	1	1	0	2	0	3	0	0	0	0	18
Utah:											
Salt Lake City.....	2	0	1	0	0	2	0	0	0	47	32
Nevada:											
Reno.....	0	1	0	5	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle.....	7	8	3	0			1	0		16	
Spokane.....	4	0	6	19			0	0		12	
Tacoma.....	3	4	3	1	0	0	0	0	0	15	28
Oregon:											
Portland.....	5	0	7	14	0	1	0	2	0	9	76
Salem.....	0	0	1	0	0	0	1	0	0	8	
California:											
Los Angeles.....	29	33	5	2	0	19	1	0	0	38	261
Sacramento.....	3	0	0	0	0	0	1	0	0	0	27
San Francisco.....	19	18	1	1	0	10	1	1	0	6	164

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	
NEW ENGLAND										
Massachusetts:										
Boston.....	6	1	0	0	0	0	0	3	1	
Springfield.....	0	0	1	1	0	0	0	0	0	
Worcester.....	1	0	0	0	0	0	0	0	0	
MIDDLE ATLANTIC										
New York:										
New York.....	15	9	3	1	0	0	1	0	0	
Pennsylvania:										
Philadelphia.....	3	2	0	0	0	0	1	0	0	
Pittsburgh.....	1	1	0	1	0	0	0	0	0	

City reports for week ended May 17, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland.....	2	0	1	1	0	0	0	0	0
Indiana:									
Indianapolis.....	4	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	2	1	0	0	0	0	0	0
Michigan:									
Detroit.....	12	10	1	0	0	0	0	0	0
Flint.....	1	1	0	0	0	0	0	0	0
Grand Rapids.....	0	0	0	1	0	0	0	0	0
Wisconsin:									
Milwaukee.....	2	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis.....	1	0	0	0	0	0	0	0	0
St. Paul.....	1	0	0	0	0	0	0	0	0
Iowa:									
Waterloo.....	1	1	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	2	1	0	0	0	0	0	0	0
St. Joseph.....	1	1	0	0	0	0	0	0	0
St. Louis.....	6	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	0	1	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	0	0	0	0	1	0	0	0	0
Virginia:									
Roanoke.....	0	0	0	0	0	1	0	0	0
North Carolina:									
Raleigh.....	0	0	0	0	1	1	0	0	0
Wilmington.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	15	0	0	0	0
Columbia.....	1	1	0	0	0	0	0	0	0
Georgia: ¹									
Atlanta.....	0	1	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis.....	8	7	0	0	0	1	0	0	0
Nashville.....	1	1	0	0	0	0	0	0	0
Alabama:									
Birmingham.....	1	0	0	0	0	0	0	0	0
Mobile.....	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans.....	0	0	0	0	6	0	0	0	1
Shreveport.....	0	0	0	0	0	2	0	0	0
Oklahoma:									
Oklahoma City.....	0	1	0	0	0	0	0	0	0
Texas:									
Houston.....	0	1	0	0	0	2	0	0	0
MOUNTAIN									
New Mexico:									
Albuquerque.....	1	0	0	1	0	0	0	0	0
Arizona:									
Phoenix.....	1	0	0	0	0	0	0	0	0
Utah:									
Salt Lake City.....	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	1	0	0	0	0	0	0	0	0
California:									
Los Angeles.....	0	0	0	0	2	1	0	1	0

¹ Typhus fever: 1 case at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 17, 1930, compared with those for a like period ended May 18, 1929. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 32,000,000. The 91 cities reporting deaths have more than 30,500,000 estimated population.

Summary of weekly reports from cities, April 13 to May 17, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929¹

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 19, 1930	Apr. 20, 1929	Apr. 26, 1930	Apr. 27, 1929	May 3, 1930	May 4, 1929	May 10, 1930	May 11, 1929	May 17, 1930	May 18, 1929
98 cities.....	88	135	93	136	85	135	79	139	² 76	124
New England.....	109	141	78	110	75	81	60	118	97	94
Middle Atlantic.....	87	198	104	194	76	190	89	206	78	159
East North Central.....	96	122	114	143	131	160	104	145	³ 92	143
West North Central.....	85	112	96	85	66	77	44	104	⁴ 74	123
South Atlantic.....	59	66	59	58	46	69	57	64	49	62
East South Central.....	20	7	54	55	0	21	7	27	40	27
West South Central.....	220	99	108	126	101	99	78	88	71	110
Mountain.....	9	70	86	78	43	61	69	52	⁵ 0	26
Pacific.....	43	58	57	58	71	72	57	39	50	56

MEASLES CASE RATES

98 cities.....	1,255	896	1,387	838	1,332	928	1,443	894	¹ 1,207	890
New England.....	1,491	408	1,566	561	1,779	498	2,109	480	1,688	431
Middle Atlantic.....	1,156	146	1,256	153	1,353	165	1,365	186	1,410	196
East North Central.....	1,084	2,028	1,009	1,964	1,015	2,322	936	2,194	² 830	2,138
West North Central.....	988	2,124	1,324	1,713	983	1,776	1,243	1,549	³ 659	1,753
South Atlantic.....	996	760	1,194	536	1,086	434	1,187	521	1,123	474
East South Central.....	337	55	459	21	299	130	499	41	405	68
West South Central.....	538	175	635	278	785	343	762	366	788	331
Mountain.....	6,617	209	8,573	366	5,758	444	8,691	296	⁴ 624	183
Pacific.....	2,100	377	2,412	377	2,069	587	2,324	422	1,949	425

SCARLET FEVER CASE RATES

98 cities.....	395	268	267	295	303	299	264	289	¹ 230	290
New England.....	368	242	319	292	246	278	284	260	239	247
Middle Atlantic.....	276	224	252	246	300	245	281	209	234	220
East North Central.....	395	418	363	451	396	467	321	454	² 308	472
West North Central.....	359	216	243	281	376	262	233	277	³ 252	281
South Atlantic.....	277	90	227	97	269	114	222	243	157	210
East South Central.....	162	144	142	109	148	226	155	130	37	103
West South Central.....	123	225	64	217	123	274	101	300	78	179
Mountain.....	343	70	223	122	352	78	360	52	⁴ 171	104
Pacific.....	168	372	305	394	128	345	151	282	149	297

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1930 and 1929, respectively.

² South Bend, Ind., Sioux City, Iowa, and Denver, Colo., not included.

³ South Bend, Ind., not included.

⁴ Sioux City, Iowa, not included.

Denver, Colo., not included.

Summary of weekly reports from cities, April 13 to May 17, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929—Continued

SMALLPOX CASE RATES

	Week ended—									
	Apr. 19, 1930	Apr. 20, 1929	Apr. 26, 1930	Apr. 27, 1929	May 3, 1930	May 4, 1929	May 10, 1930	May 11, 1929	May 17, 1930	May 18, 1929
98 cities	28	9	30	13	28	12	24	11	² 22	11
New England.....	2	0	0	0	0	0	2	2	0	0
Middle Atlantic.....	0	0	0	0	1	0	0	0	0	0
East North Central.....	23	11	18	17	21	15	23	17	³ 15	14
West North Central.....	137	10	142	13	129	13	99	27	⁴ 117	15
South Atlantic.....	4	2	0	2	0	0	0	0	4	2
East South Central.....	20	0	47	0	40	21	7	27	81	14
West South Central.....	75	11	41	23	34	42	41	8	22	50
Mountain.....	26	44	94	26	146	122	77	26	³ 120	148
Pacific.....	83	60	128	80	85	39	97	39	54	14

TYPHOID FEVER CASE RATES

98 cities	6	10	6	8	7	8	7	11	² 8	9
New England.....	7	7	4	4	2	7	0	11	9	9
Middle Atlantic.....	2	8	5	4	3	5	4	3	7	6
East North Central.....	3	4	6	4	6	3	3	6	³ 2	3
West North Central.....	8	10	4	12	4	10	8	31	⁴ 8	6
South Atlantic.....	20	24	11	17	5	11	15	15	13	17
East South Central.....	7	7	0	21	27	27	20	27	47	0
West South Central.....	7	42	28	34	22	30	4	53	37	65
Mountain.....	17	0	0	0	51	9	17	0	³ 0	0
Pacific.....	9	10	5	7	7	10	24	7	2	7

INFLUENZA DEATH RATES

91 cities	15	15	12	13	9	8	10	10	⁴ 8	8
New England.....	7	9	11	7	4	2	9	2	0	2
Middle Atlantic.....	15	10	9	12	10	6	10	8	7	8
East North Central.....	13	14	14	6	7	5	9	7	³ 4	7
West North Central.....	18	18	9	12	9	18	3	3	3	0
South Atlantic.....	20	21	11	13	15	11	5	17	18	7
East South Central.....	66	15	44	30	22	30	15	37	44	30
West South Central.....	27	51	27	43	23	8	31	27	4	4
Mountain.....	9	9	17	52	0	17	0	26	³ 0	17
Pacific.....	3	13	0	13	6	16	9	13	15	22

PNEUMONIA DEATH RATES

91 cities	153	127	144	117	139	123	137	109	⁴ 104	106
New England.....	146	114	173	144	151	106	120	90	102	88
Middle Atlantic.....	190	134	168	130	172	136	185	123	130	114
East North Central.....	115	119	109	99	108	125	93	101	³ 68	115
West North Central.....	154	168	80	111	112	126	124	105	106	75
South Atlantic.....	185	146	192	127	187	109	121	109	156	120
East South Central.....	236	157	258	97	140	172	162	149	96	90
West South Central.....	130	78	142	90	119	90	176	94	84	109
Mountain.....	163	122	146	87	60	165	120	87	³ 51	13
Pacific.....	46	151	61	119	52	72	64	94	58	47

¹ South Bend, Ind., Sioux City, Iowa, and Denver, Colo., not included.

² South Bend, Ind., not included.

³ Sioux City, Iowa, not included.

⁴ Denver, Colo., not included.

⁵ South Bend, Ind., and Denver, Colo., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended May 10, 1930.—The Department of Pensions and National Health reports cases of certain communicable diseases in Canada for the week ended May 10, 1930, as follows:

Province	Cerebro-spinal meningitis	Influenza	Poliomy-elitis	Small-pox	Typhoid fever
Prince Edward Island ¹					
Nova Scotia		10			
New Brunswick					1
Quebec					14
Ontario	3	11		14	9
Manitoba					1
Saskatchewan				20	
Alberta ¹					
British Columbia			2		2
Total	3	21	2	34	27

¹ No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended May 17, 1930.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 17, 1930, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	4	Measles	143
Chicken pox	75	Mumps	104
Diphtheria	45	Scarlet fever	106
Erysipelas	8	Tuberculosis	30
German measles	51	Typhoid fever	19
Influenza	4	Whooping cough	47

CHINA

Meningitis.—During the week ended May 3, 1930, five cases of meningitis, with two deaths were reported at Canton, China.

(1327)

CZECHOSLOVAKIA

Communicable diseases—March, 1930.—During the month of March, 1930, communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	4	.....	Paratyphoid fever.....	8	1
Cerebrospinal meningitis.....	20	8	Rabies.....	1	1
Diphtheria.....	1,883	119	Scarlet fever.....	1,689	44
Dysentery.....	15	1	Trachoma.....	218	.....
Malaria.....	3	.....	Typhoid fever.....	524	36
Puerperal fever.....	68	21			

PHILIPPINE ISLANDS

Meningitis.—During the week ended May 24, 1930, four cases of meningitis, with one death, were reported in Manila, P. I.

YUGOSLAVIA

Communicable diseases—April, 1930.—During the month of April, 1930, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	33	4	Puerperal sepsis.....	4	1
Cerebrospinal meningitis.....	10	6	Scarlet fever.....	900	151
Diphtheria.....	382	57	Tetanus.....	28	10
Dysentery.....	26	1	Typhoid fever.....	164	23
Erysipelas.....	168	6	Typhus fever.....	22	4
Measles.....	1,209	62			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place	Week ended—															
	February, 1930				March, 1930				April, 1930				May, 1930			
	15		22		1		8		15		22		29		5	
	Nov. 17- Dec. 14, 1929	Dec. 15, 1929- Jan. 11, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Nov. 17- Dec. 14, 1929	Dec. 15, 1929- Jan. 11, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930	Jan. 12- Feb. 8, 1930
China:																
Canton.....	2															
Manchuria—Dairen.....	2															
Swatow.....	10,362	12,350	6,461	1,238	1,515	1,564	1,834	2,278	2,087	4,018						
India.....	10,903	6,507	3,006	877	900	829	929	1,225	1,526	2,186	3	1	1	1	2	1
Basseln.....																
Bombay.....																
Calcutta.....	265	138	302	65	53	105	97	53	110	94	137	165	165	118		
Madras.....	114	90	110	45	25	56	73	25	51	71	85	118	118			
Negapatam.....	2															
Rangoon.....																
Tuticorin.....	1	1	4	1	1	1	1	1	1	1						
India (French):																
Chander Nagar.....	1	1	3	1	1	1	1	1	1	1						
Karikal.....	23	35	3													
Pondicherry Province.....	6	9	1													
	14	1		1	2	1	1	1	1	1	2	1	1	1	1	1
	12	1		2	1	1	1	1	1	1	1	1	1	1	1	1
	4	1		2	1	1	1	1	1	1	1	1	1	1	1	1
	3	1		2	1	1	1	1	1	1	1	1	1	1	1	1

PLAGUE

Week ended—

Place	Nov. 17- Dec. 14, 1929	Dec. 15, 1929- Jan. 11, 1930	Jan. 12- Feb. 8, 1930	February, 1930		March, 1930						April, 1930					May, 1930																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
				15	22	1	8	15	22	29	5	12	19	26	3	10	17	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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¹ On Mar. 11, 3 deaths from bubonic plague were reported in Andalgala, Catamarca Province, Argentina, since Feb. 5, 1930.² 21 cases of plague with 8 deaths were reported Jan. 29, 1930, in the State of Sao Paulo, Brazil; 15 of these cases were in the city of Sao Paulo.

Chosen (see table below).

Egypt:

Alexandria.....

Assuan.....

Beheira Province.....

Cairo.....

Dakahlieh.....

Port Said.....

Suez.....

Greece (see table below).

Iraq: Baghdad Liwa.....

Ireland:

Irish Free State.....

Dingle-Kerry County.....

Swinford-Mayo County.....

Northern Ireland-Cookstown.....

Latvia (see table below).

Lithuania (see table below).

Mexico: Mexico City, including municipalities in Federal District.....

Morocco.....

Palestine.....

Peru: Arequipa (see table below).

Poland.....

Portugal: Oporto.....

Rumania.....

Tunisia.....

Turkey (see table below).

Union of South Africa:

Cape Province.....

Natal.....

Orange Free State.....

Transvaal.....

Yugoslavia (see table below).

1 Press reports show that 10 deaths from typhus fever occurred in Sao Paulo, Brazil, from Nov. 3 to 30, 1929.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; F, present]

Place	October, 1929	November, 1929	December, 1929	January, 1930	February, 1930	March, 1930	Place	October, 1929	November, 1929	December, 1929	January, 1930	February, 1930	March, 1930
Chosen: Seoul.....		3	1		17		Lithuania.....	6	4	5	2	70	62
Czechoslovakia.....				10	2	42	.....	1	1	1		5	4
France.....			1				Peru: Arequipa.....						
Greece: Athens.....			6	12	6	3	Turkey.....	10	2	4	2	3	1
Latvia.....			2	18			Yugoslavia.....	1		6	25	33	46
									1	3	5	2

YELLOW FEVER

On April 22, 1930, 2 cases of yellow fever were reported at Mage, Brazil, located on the Leopoldina Railway, between Rio de Janeiro and Niteroi; one case of yellow fever was reported in Campos, Brazil, on May 23, 1930, and one case of yellow fever was reported in the Gold Coast during the week ended December 21, 1929.